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ABSTRACT

This study contributes to discourse surrounding equity in opportunities for constituencies who are under-represented in the decision making process surrounding interactive television (ITV) adoption, yet account for a great portion of faculty and students who must then use it. The paper touches on the material expression of a culture's value system, illuminates the power structures under which ITV networks operate, reviews common design features of ITV classrooms and speculates upon the nature of ITV instructional presentations. The study indicates that even as ITV is reputed to be successful and liberating, it is potentially obstructive and disempowering at the same time; it shows how ITV can interfere with goal achievement for students and instructors whose needs and preferences are ignored throughout the planning, implementation, and evaluation processes. The paper concludes with a recommendation that great care must be taken by decision makers to insure that the many needs of the actual users are identified and equitably addressed, which means inviting and embracing the participation of various representative constituencies in the fact finding and decision making process. (Contains 48 references.) (AEF)

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Obstructive Interactive Television Designs: The Influence of Culture, Gender and Power

Nancy Nelson Knupfer and Theresa E. Gram

Abstract

As instructional television becomes more popular it is important to examine the environment in which it is used along with common practices in order to provide guidance in offering the best instruction for all students. This study indicates that even as ITV is reputed to be successful and liberating, it is potentially obstructive and disempowering at the same time. Care must be taken to include the teachers and students who use instructional television in all stages of the planning, implementation, and evaluation processes.

Integration of interactive television (ITV) into the regular course schedule is occurring in more instructional situations and in greater numbers of course offerings each year. If implemented appropriately, ITV can provide a rich and powerful learning environment that employs visual learning in a meaningful way. It can allow the sharing of visual resources across various groups of people, in different geographical locations.

The reasons for the increased use of ITV in recent years are numerous, ranging from the practical needs of serving students to the desire to integrate technology into the learning process. Politicians are pushing for increased funding for and utilization of ITV by convincing people that ITV increases the interaction between teachers and students. Thus the impetus that is moving ITV into more classrooms spans the range from being driven by real curriculum needs to being pushed by technology and it affects a broad range of learners from young children to mature adults in both school and corporate settings.

For each situation, the specific reasons for implementing ITV are varied and many. Yet the common thread among all who implement ITV is that they claim to be seeking a better way to serve various educational needs. Many people believe that the most important advantage of ITV for small, geographically isolated schools is that ITV provides access to advanced or specialized courses that would not otherwise be available to them.

For both rural and urban settings, ITV offers flexibility in scheduling by enabling schools to offer multiple sections of a course, if necessary. This can be especially important in corporate training rooms where various work schedules need to be accommodated in order to participate in the training. Hence, many people regard ITV as a practical tool that helps high schools better prepare students to succeed in higher education and within the career marketplace, and helps improve workplace skills by providing current training into corporate situations.

There is no doubt about ITV's utility in providing enhanced curriculum opportunities and scheduling alternatives, but outcomes of using ITV are varied and complex. There is a dearth of information in the literature pertaining to the complexities of ITV's attendant outcomes. This paper considers important aspects of ITV learning environments that have yet to be adequately explored. It contributes to discourse surrounding equity in opportunities for constituencies who are under-represented in the decision making process surrounding ITV adoption, yet account for a great portion of the faculty and students who must then use it. It touches on material expression of a culture's value system. It illuminates the power structures under whose aegis ITV networks operate. It reviews common design features of ITV classrooms and speculates upon the nature of ITV instructional presentations.

This study indicates that even as ITV is reputed to be successful and liberating, it is potentially obstructive and disempowering at the same time. It can indeed interfere with goal achievement for students and instructors whose needs and preferences are ignored throughout the planning, implementation, and evaluation processes.

Culture, Gender and Power

The socially constructed meaning, expectations, and opportunities based on gender begin with differing expectations for people, depending upon their sex at birth (Stern & Karraker, 1989). The

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recent news media attention to the pathetic and heart-wrenching plight of unwanted baby girls who have been killed or dumped in orphanages (Chen, 1996; Human Rights Watch, 1996; Tyler, 1996) is not a value that is restricted to the Chinese culture. It is a value the reflects itself in the daily lives and education of many people in many cultures that elevate males to positions of power and control while females are groomed for secondary roles. It reveals itself in the way we groom boys for leadership positions while we teach girls to be submissive, in the way we emphasize the importance of male-dominated sports, in the way teachers respond to boys differently than to girls (Olivares & Rosenthal, 1992), in the way stereotypes are perpetuated in the media (Kilbourne, 1990; Schwartz & Markham, 1985), in the way we recruit for jobs (Bem & Bem, 1973; Fidell, 1975; Rowe, 1990), and in the way we design ITV classrooms for distance education. It reveals itself in the way we provide examples, exercises, and meaningful educational opportunities that males can often relate to better than females.

Meaningful practice must do more to attend to these matters and take an active role in encouraging females (Van Nostrand, 1991). Designers of educational materials and environments can make a better effort to provide experiences that girls can relate to, offering instructional opportunities that are not gender biased, and encouraging teachers to actively attend to issues of gender equity (Turkle & Papert 1990).

Visual designers can accept the importance of their role in shaping the self concept and encouraging equitable access to skills that later translate into life skills and wages commensurate with experience. A more positive and forward-thinking outlook on the role of females in our society can certainly do much to influence the drive and effort that is currently necessary for females to overcome the many obstacles in daily life.

People can influence educational practice by designing instructional environments that attend to the needs of the female population as well as those of males. They can encourage reflective practice that makes adjustments to the needs at hand. The information age brings the challenge of shifting responsibilities and a new opportunity to examine ways to assist females in school situations that employ visual technologies.

A meaningful examination of the merit surrounding any educational practice requires viewing it within the realm of its culture. Institutions, technologies, policies, and practices are material expressions of the dominant culture's ethos and its attendant meanings (Cockburn, 1983; Trask, 1986). Therefore an assessment of the status of ITV requires an unbiased inspection of the institutions involved, technologies employed, policies determined, and common practices within a cultural perspective.

Educational institutions are purposeful enterprises driven by power structures that are informed by openly endorsed agendas of both political and personal origin (Freire, 1970; Knupfer, 1993; Shor & Freire, 1987). The composition of these power structures in relation to ITV is disclosed by an analysis of one Midwest state's instructional leadership structure and a close examination of ITV implementation. This analysis reveals that leadership and decision-making is clearly dominated by males who hold nearly all of the leadership roles, while the people who implement the ITV are females (Kansas State Board of Education, 1995). Preliminary analysis of the various constituencies that guide ITV network operations yields a similar result. Perhaps that is not important, then again, some reflection upon the situation raises questions that suggest that it might be more important than one would immediately realize. For example, consider the possible answers to the following questions.

Are students and faculty best served by decisions that are made by the dominant, male administrative culture? If so, why and if not, why not? In which areas might there be different emphases, depending on the cultural background of the decision makers? What patterns of decision-making are evident in terms of ITV course delivery? To what extent do the current ITV facilities and practices support the needs of those who actually use them? In what ways do the current ITV facilities reflect the needs of the decision makers but fall short of those who implement the technology? To what degree are the physical attributes and value systems of the

decision makers reflected in the design of ITV environments and how does this affect the instructors and learners?

From time immemorial, males have been in decision-making roles within American homes, businesses, and educational institutions. Society has carried messages about gender stereotyping within instructional products and schooling practices, through the mass media, within social practice, and so on, thus perpetuating the situation complete with its advantages and disadvantages. Of course, there are good points to male leadership but there also are drawbacks. The disadvantages are likely to occur when decisions are made in isolation without regard to the female perspective.

As we witness a new time in education, when people are calling for school reform and the implementation of technology all in one breath, there is an opportunity to ask once again, whether or not there is adequate representation of the teachers, mostly female, in the business of ITV. It seems that the role of women in relation to the new media has made little progress, possibly even less than that within the more traditional forms of schooling. Could this be because technology has been viewed as male territory?

The deeply ingrained cultural stereotypes and practices related to gender continue to support instruction in its historical sense by constantly feeding the old system while stifling attempts to pay serious attention to gender equity (McCormick, 1994; Gornick & Moran, 1972). Materials developed for use in public, private, and military schools as well as instructional messages delivered to the public through advertising, television, and public service messages continue to portray males and females in stereotypical ways, with males in dominant positions. This has indeed been carried forth into the gender messages portrayed to the public about using the new technologies (Knupfer, 1996). Common practice dictates that males will serve in leadership and authority roles while females serve in subordinate positions. We see it in the images of males and females in the media, and we see it in practice. Thus decisions about instruction are often made by males and need to be implemented by females.

The complexities of this situation are enormous. Like society itself the complexities reflect the dynamics of different situations in different ways, among different individuals. An examination of the complex relationship between instructional planning and design, and gender reveals inequities that result from a persistent pattern of practice. Recognizing the result of those inequities can be easier than finding the causes and correcting the problem.

Inequities that result from the traditional practice of male decision making and female responsibility for implementation within the instructional system often go unrecognized because they emerge not just as a result of what has been done, but also as a result of what has been left undone. The neglect and omission of the female population reveal themselves in subtle ways on an individual basis, but as a collective result appear throughout society as something that begins in the home, and perpetuates itself through schooling and employment practices. If that were not the case, then there would be no need for recent efforts to attract girls into fields of study that are typically populated by males (Kable & Meece, 1994) and the number of distressing stories about females succeeding despite the myriad of obstacles (Aisenberg & Harrington, 1988; Clark & Corcoran, 1986; Frenkel, 1990; Gornick, 1990) would no longer be told.

Innovation and ITV

Implementation is change in action; it is the deliberate spreading of novel, specific change in a planned manner (Miles, 1964). The final outcome of any attempted innovation depends directly upon proper implementation. Fullan (1982) diagrammed four components of the evolutionary process of change and implementation as being along the spectrum of initiation, implementation, continuation, and as the genesis and proposal of an innovation. Implementation embodies the proposal's adoption and use. Continuation involves complete midcourse follow-through by all participants to determine strengths and weaknesses of the implementation. Finally, the outcome of the change process entails the evaluation of success or failure.

After being utilized for many years in various ways (Cuban, 1986), distance education efforts are now placing a new emphasis on ITV that supposedly is more

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accessible and affordable then in previous years. Unfortunately, the apparently easy access permits teacher and administrators to overlook the need for thorough planning in the rush to place the ITV facilities. Yet without firm direction, ITV could end up in the junkyard with many other poorly-implemented innovations.

The conditions under which an innovation is implemented contribute just as much to the nature of the outcome as do the status of staff preparation and the presence of knowledgeable adopters. Such conditions include the classroom organization, the availability of instructional resources, and the more general demands of the school system or district. The competing demands of modern educational environments impress upon the innovator the need to adapt instructional media to the circumstances and with consideration of the sociopolitical climate (Knupfer, 1993).

The teacher's role in school innovations is so important that educational change depends on what they do and think (Cuban, 1986; Fullan, 1982); Sarason, 1971). Because the teacher lives and works in a classroom with its own built-in imperatives and social culture, the teacher's real working conditions must be taken into account when planning and implementing any educational innovation (Knupfer, 1993). The teacher will judge the acceptability of any innovation by its conformance to current needs and objectives, and not according to some agenda that is foreign to the teacher's experience (Knupfer, 1988). Teachers must help to guide educational change, and not be its victims (Knupfer, 1987).

As a part of the current emphasis on using technology in education, ITV is a fast growing and popular area that holds a prominent position in distance education efforts. In this position, it will have great impact on its users. All too often, political and fiscal forces operate beyond the teacher's control and adversely affect change efforts (Fullan & Stiegelbauer, 1991; Weinshank, Trumbull & Daly, 1983). There is a tendency to oversell innovations to obtain funding and get them adopted by policy-makers, teachers, and others (Knupfer, 1987). Implementation of any change requires that the change have meaning for the teacher (Fullan & Stiegelbauer, 1991). Teachers' concerns about an innovation can be abated or exacerbated, depending on how the innovation is introduced (Knupfer, 1987).

Like any other educational innovation, the teachers must be involved in the planning and implementation of ITV. If teachers are to use ITV productively, then it needs to be implemented in such a way that it meets their needs and they are not uncomfortable. Many scholars insist that great strides have been made concerning gender equity in education, but it has not been enough and clearly, males are still making decisions about ITV without the input of the female teachers. Not only are the majority of decisions about technological purchases being decided by males, but also the decisions about the design of ITV classrooms and utilization of equipment as well, thus leading to situations that are decided by males and structured for males users.

The nature of this differential service is revealed in ITV's emerging language that is generative in nature as it evolves from a of its own set of references. The language of ITV, like that of many other technologies, is sometimes exclusionary in meaning, as well as evocative of prescribed ways of thinking and acting (Segal, 1994; Cockburn, 1983; Lakoff, 1983; Zimmerman, 1983). ITV classroom designs and ITV activities are therefore material expression of the decision makers' value systems. If indeed the value system that is reflected is that of males, by and for males, then how does that affect the faculty and students who are females? If the way that communication is supported and conveyed is predominantly informed by males, then does it address the needs of the female users? The power of this technology and its apparent predisposition to serve a selected part of the population positions ITV squarely into discussions about visual communication and gender equity.

The various physical features designed into the ITV course environment may influence learning among students due to different contributions to cognitive load that emerge from conflicts between perceptions and expectations. A major goal of ITV course delivery is to optimize interaction between instructors and students. Therefore, factors that influence potential interaction and its resulting

communication between instructors and students would be evident in the extent of interaction and depth of understanding. On the surface, this statement seems contrary to Boak and Kirby's (1989) observations that females express heightened apprehension about communicating in formal class settings yet score as well, or better, on exams compared to males. The contradiction is somewhat resolved by Warren's (1989) and Patoine's (1989) conclusions that students who encounter alien or inhospitable learning environments tend to exercise one of three options in dealing with them as follows:

1) conform at a personal cost of greater effort expenditure;
2) delay timely interaction while searching for alternative action aimed at attaining the same goal; or
3) practice communication avoidance while grappling with an overwhelming sense of betrayal and helplessness that often portends withdrawal or failure.

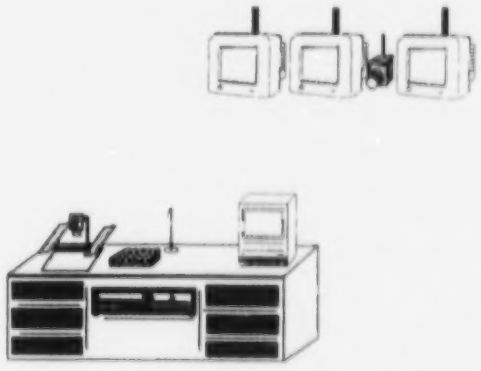
Unfortunately, instructional leaders and policy makers typically possess only superficial knowledge about educational technology (Kirby & Garrison, 1989). As a consequence, technology consultants are often commissioned to clarify the meaning of technoculture's exclusionary language. Because the technology is dominated by males and male language, their powerful role in guiding ITV decisions strengthens and further perpetuates the gendered ethos that is visible in ITV classroom designs and arrangement of ITV instructional technologies that in turn influence ITV presentations. Evidence of that dominion is clearly visible.

Design Features and Implications

Drawing upon the literature, interviews, and observations, profiles of ITV classroom design features were collected from several sites and analyzed. Analysis of this information underscores a well grounded hypothesis that ITV classrooms are designed according to some criteria other than the needs of the instructors and students who use them. Site designs ignore the spectrum of physical attributes and psychological needs of teachers and students. Evidence that gendered messages are made concrete and then replicated in the dimensions of furnishings, locations of audio and video devices, and types of audio handling devices are visible to a certain degree in the different situations.

Data collected in the various design categories of furnishings, dimensions, and layouts indicate a clear and consistent male bias. The console dimensions and the fixed distances between device controls favor a Titan standard from a diminutive person's perspective. The height of the console's work surface and the distance between the work area and control panels compels instructors to exhibit behavior similar to that of students in inhospitable educational settings. That is they conform, seek alternatives, or withdraw. For an example of a typical work area, see Figure 1.

Figure 1
Typical Work Area



Mismatched physical attributes also convey negative messages to students. Unnatural or uncomfortable physical relationships between the console components and the instructor often translate into disruptions in presentation flow that erroneously communicates that an instructor lacks organization or possesses weak presentation skills. Worse yet, unavoidable pauses attributed to design may be perceived as a lack of preparation which may suggest to some viewers that they rank quite low on the presenter's list of priorities.

Adding insult to injury, for some instructors the camera and monitor banks are located such that the presenter is obstructed in maintaining the illusion of eye contact with all viewers and so another negative message is sent. This obstructed

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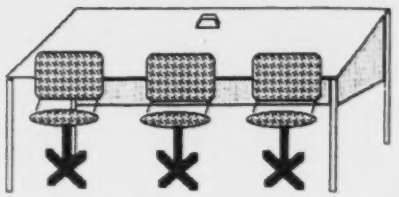
view can lead to missed student messages to the instructor and the cycle of yet another erroneous interpretation is formed.

Unfortunately, problems with camera locations are not restricted to simulated presence. The potential for camera placement to utterly disable an instructor was revealed by an instructor whose camera tracking device failed causing the camera to be fixed on her ample bust. Armed with nominal technical training and hijacked by her emotions, her novice status congealed rendering her unable to break free from the leering gaze of the camera. She canceled class and no longer enters the ITV classroom with confidence. The camera is now her nemesis and she is not likely to teach another course with ITV. It is likely however, that female students across the sites were similarly embarrassed by that powerful image and her response to it, thus sending yet another message about the inhospitable environment of ITV to females. Viewers are thus not immune to the various design limitations of ITV classrooms.

The gendered perspectives of those who inform the decision-making process impose their preferences on teachers and students in many ways. For example, furniture that is selected solely for its durability, cost, and purported universal fit can quickly translate into an inhospitable learning environment as furnishings are typically not selected to suit the needs of students whose physical attributes are at the extremes of various continua. Students quickly ascertain the likelihood of physical comfort in a learning environment and perhaps too, the attendant success potential. Just as a classroom that is too hot, cold, dark, bright, or noisy contributes to a student's burdens so would personal comfort.

The placement of desktop microphones further exemplifies the authority of a gendered measure in ITV classroom design. Microphone spacing and elevation may signify that microphones are meant to be shared or perhaps are objects for which students shall openly compete. Microphone spacing may signify that one must invade another's space in order to successfully enter into a dialog (See Figure 2). More potentially negative messages take form.

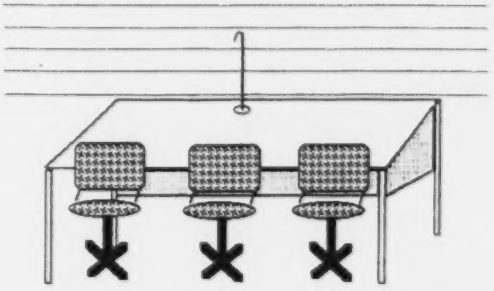
Figure 2
Microphone Spacing



Institutional ignorance of the cultural, behavioral, and sociological aspects of distances between individuals, is evident in many situations. Yet proxemics may be as much an obstruction to communication and intellectual involvement as are displays of dominance by boorish students who stake out turf in front of a microphone and silently dare others to intrude. Ignorance is such a poor defense when information about needs was not solicited from those expected to use the technologies.

Microphone elevation appears to be yet another factor that is typically not considered during the ITV planning process (see Figure 3). Pedestals that place the microphone beyond the cone of effective signal generation yield weak signals. The speaker may thus seem uncertain or timid. Corrective actions toward achieving a stronger signal such as speaking louder or repositioning oneself relative to the microphone may be undesirable or impossible for the teachers or student.

Figure 3
Microphone Elevation



In any case, initial perceptions about the utility and hospitality of any ITV

classroom may be drawn from interpretations about the meanings of furnishings and room layout. First impressions may potentially set the tone for later interactions and general expectations. Who shall be invited into the interaction and who shall be merely tolerated? Whose expectations should be wholly indulged and whose superficially humored? The key informers of ITV designs are primarily males. Is that dominion manifest in the ITV classroom design?

The male bias is evident, by degree, in the physical attributes of the ITV sites that were examined. Manifest in the classroom objects, it is reasonable to suspect that it should also be evident in the class presentations. Observations affirm that the influence of the dominant culture's perspective is discernible in the graphic art and content display of presentations though diffident in the presentation methods.

The most insensitive display that we observed occurred at a network dedication ceremony during which a psychology instructor opened his presentation with a videotaped image of himself in disguise and intensely examining a Playboy magazine centerfold from various angles. The women in attendance shook their heads in displeasure while a great number of males laughed and grinned. Other men, a small number, did not visibly respond. Follow-up conversations with several of the women, without exception, deemed the presenter to be a consummate boor, ignorant of the boundaries of good taste, and definitely the rube he portrayed. The men who responded favorably were judged as condoning and encouraging of this type of event because of their laughter. The males who did not respond openly and remained quiet were judged as either ignorant that this display was offensive or were thought to be offended as well. While the dedication ceremony itself was an isolated event, the value system that drove its production and allowed it to pass muster can be legitimately identified as an example of the subtle instances of gender bias the occur day after day in a male dominated environments. The male culture drove the media display within the ceremony and the male culture influences the media use under general circumstances.

A parallel study of instructional presentations substantiates a belief that the dominant male culture's value system is permissive both in portraying others in disparaging ways and in omitting portrayal of other cultures. Even when schooled in the rudiments of graphic design for ITV presentations and cultural sensitivity at a workshop, most instructors produced sample presentations that were marginally attentive to the total visual message and to the representation of gender-based messages.

It would be a mistake to make an unfounded leap toward assigning apparent gender bias in presentations to cultural dominance since other factors contribute substantially to presentation content and delivery. Among those factors are the:

1) amount of time available for production of presentation images,
2) lack of available scanning technology,
3) nominal skills in production design and development,
4) ignorance of issues in visual literacy,
5) ignorance of issues of instructional design,
6) limited clip-art libraries bundled with presentation software.

These circumstances combined with cultural values promote the use of canned graphics on prepared templates in ways that yield a visual concoction that transmits conflicting and negative messages. For example, the large majority of clip-art images available with the popular software depict males in leadership and authority roles, while women are depicted in subordinate roles (Binns & Branch, 1995).

Recommendation

Though standardization across member sites of any particular network is a desirable feature, great care must be taken by decision makers to insure that the many needs of the actual users are identified and equitably addressed. This means inviting and embracing the participation of various representative constituencies into the fact finding and decision-making processes.

Even though all needs cannot immediately be met, it is important to view ITV classroom designs with amenability to adaptation as a guidepost. It also would be helpful to deliberately fund specific line items aimed at a spectrum of planning check points ranging from current to long plans toward meeting users' needs. In

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doing so, perhaps the burdens students bear will be lightened in some measurable way.

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